

CLAIMS

What is claimed is:

1. Device for sucking off specified surface areas on powder-coated vehicle wheels, characterized in that it includes:
 - 5 a) a conveyor system, which carries the vehicle wheels along a movement path through the device;
 - b) an electronic camera, using which an axial and an angular position of the vehicle wheels can be recorded in a recording station ;
 - c) a suction station with a movable suction head, which includes multiple suction nozzles;
 - 10 d) a movement device, which is capable of guiding the suction head in various axial orientations and angular positions around an axis of the movement device and onto the powder-coated surface of a vehicle wheel in the suction station, and of moving it a certain distance in this position at the speed of the vehicle wheel;
 - e) a vacuum source, which is connected to the suction nozzles;
 - f) a controller, which passes on the data which is recorded in the recording station for the axial and angular position of a particular vehicle wheel to the movement device of the suction head, with a time delay corresponding to the pass time of the vehicle wheel between the recording station and the suction station, wherein the controller causes the movement device to guide the suction head onto the vehicle wheel with appropriate alignment of its axis and angular position, and to move with the wheel over a certain distance.

2. Device according to Claim 1, wherein the movement device is a robot with a corresponding number of axes, and the suction head is fixed to the end of a robot arm.

3. Device according to Claim 1, wherein the device includes a number of replaceable suction heads which are each assigned to different types of vehicle wheels.

4. Device according to Claim 3, wherein the electronic camera is also capable of recognising the type of vehicle wheel which it records.

10 5. Device according to Claim 3, wherein the movement device is a robot with a corresponding number of axes, and the suction heads can be fixed to a robot arm via a tool exchange system.

6. Device according to Claim 5, wherein for each suction head, a deposit area is provided 15 within reach of the robot arm.

7. Device according to Claim 1, wherein the conveyor device includes a chain conveyor.

8. Device according to Claim 1, wherein the vehicle wheels can be placed on spindles, 20 which are in turn fixed to the conveyor device and can be rotated around their own axis.

9. Device according to Claim 1, wherein a synchronisation device is provided on the route section between the recording station and the suction station, which absorbs any play in the conveyor device and ensures a precisely defined speed of the vehicle wheels.

5 10. Device according to Claim 9, wherein the synchronisation device includes two endless loops, having strands that extend parallel to the movement path of the vehicle wheels.

11. Device according to Claim 10, wherein the vehicle wheels can be placed on spindles, and the strands having at least inner strands and outer strands the spindles being clamped between the 10 inner strands.

12. Device according to Claim 1, wherein the suction nozzles are implemented on a nozzle unit which is arranged so that it can be moved within the suction head and is pressed by a spring device into a position in which the suction nozzles project above the suction head to the 15 maximum extent.

13. Device according to Claim 12, wherein a sensor is provided, which outputs an alarm signal to the controller if the nozzle unit is moved further than a predefined distance against the spring device.

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14. Device according to Claim 1, wherein the suction head has multiple suction nozzles, which are arranged at an identical radial distance from an axis of the suction head and are used to suck off ring surfaces which surround openings of fixing holes of the vehicle wheel.

15. Device according to Claim 1, wherein the suction head has a ring nozzle which is coaxial to an axis of the suction head, and is used to suck off surfaces of a hub hole of the vehicle wheel.

5 15. Device according to Claim 1, wherein the vacuum source is an industrial vacuum cleaner.

16. Device according to Claim 8, wherein the spindles each have a spindle head with a centring cone, the centring cone having a piston-like section which is guided movably in a hole of the spindle head and is affected by a spring device, and a projecting conical section which is guided through a hole on the upper side of the spindle head, which conical section, as the suction head approaches the vehicle wheel, comes into contact with part of the suction head, so that a centring cone is pushed back in the hole of the spindle head against the spring device, and a gap is freed between the conical section of the centring cone and the hole in the upper side of the spindle head.